

Derby Diocesan Association of Church Bellringers	Report DDACB 02/07
Christ Church, Cotmanhay Inspection of Bell	Issue Date 23/01/07

1.0 Introduction

The inspection was requested by Mrs Boulton on behalf of the PCC and was carried out by Mike Banks and Robin Lyon on Thursday 18th. January 2007

2.0 General

The single bell was originally hung in the old Christ Church, Cotmanhay. There had been problems with subsidence due to mining activities in the area and the old church was pulled down and replaced by a new church on the present site in 1988. The single bell was reinstated and now hangs within the building behind a single louvre constructed of wood at the South West corner.

The bell has not been rung for several years due to complaints of noise from a neighbour. It is hoped that this problem is now resolved and the inspection was requested to check over the installation prior to the bell being rung more frequently.

3.0 The Bell

The bell is fixed for swing chiming only. Details (taken from "The Church Bells of Derbyshire" by Pat Halls and George Dawson) are as follows

Bell no.	Diameter mm. (ins)	Weight cwt	Date Approx	Founder
1	540(21.25)	2-0-11	1873	Taylors

The bell has not been quarter turned about the vertical axis to present an unworn surface to the clapper. There was some wear at the strike point on one side of the bell through a wide arc which shows that the clapper has been loose in the headstock for a considerable length of time. The bell was chimed and had a nice tone and appeared not to be cracked.

4.0 Bell Installation The bell is located approximately 7 metres above ground floor level in an area adjacent to the boiler. The bell can be chimed from the ground floor by pulling on either of the bell ropes that hang down from the cantilevered arm that is fixed to the headstock. Access to the bell is gained by climbing the twelve steps of the vertical metal ladder to a platform and then climbing a further nine steps up another vertical ladder. The top two rawlbolts, on this ladder, that physically hold the ladder against the wall on the window side, were insecurely fixed and the ladder on that side is gradually pulling away from the wall. The low sided cast iron frame is of solid construction with substantial tie rods running North South fixed across the top of the frame at either end. The frame is fixed to the two foundation beams by four through bolts, one at each corner. These holding bolts are all loose and the frame could be 'rocked' by hand.

The two foundation beams running East to West are keyed into the brick walls at both ends. It was found that, although both foundation beams appeared to be rigid, some of the brickwork was in need of attention where they are grouted into the wall.

5.0 Bell components and fittings

5.1 Headstock and Bearings

Two through bolts that appeared tight attach the bell to the headstock. The bearings are of plain type construction and the protective cap is missing from the window side bearing. This appears to have been broken off at some time, possibly when the bell was actually reinstated. The journal on the window side bearing appears to be fretted/ scored but the inboard journal appears to be in reasonable condition as the bell swung quite freely.

5.2 The Clapper

The wrought iron clapper is loose in the headstock and requires tightening. The clapper bearing, fitted with an old type screw in lubricator, was OK but there is heavy wear on one side of the clapper where it strikes the bell. The clapper should be turned through 180 degrees about its vertical axis when the retightening work is undertaken.

5.3 Chiming mechanism

The bell is chimed by pulling either of the ropes that hang down to floor level. Approximately on a level with the foundation beams the ropes pass through a single plastic ring fixed to the outer wall that acts as a guide. The upper ends of the ropes are tied to a metal cantilever bar. This is firmly fixed to the bell bearing shaft which is extended on the window side only.

5.4 The Bell Stop

To stop the bell being rung full circle a wooden block has been fitted to the top of the cast iron frame on the East side only. The metal fixings are worn allowing the whole stop to move freely.

6.0 Recommendations

6.1 The grease in the bearings should be removed and the journals and bearing surfaces thoroughly cleaned and inspected for pitting and grooving. A new charge of grease should be applied

The missing cap on the window side bearing should be replaced or protected by fitting a newly constructed cover. The purpose of the cover is purely to keep foreign matter out (water, dust etc.) and is not required to hold the bearing captive.

6.2 The clapper should be turned through 180 and tightened in the headstock using the following procedure which requires two people.

Remove the old split pin which passes through the nut on the headstock. One person should now hold the clapper firmly against the sound bow of the bell whilst the other person, using suitable spanner, can slacken off the nut. On this installation a good application of easing oil to the threaded section down which the nut is fitted should help.

The person holding the clapper should now take the full weight allowing the nut and washers to be removed. The clapper should now been turned through 180 degrees about its vertical axis and fed back up through the square section hole making sure that the leather washer is still in place on the underside of the bell. The clapper should now be held against the strike face of the bell in the middle of the worn section. New washers and a new 'castellated' nut can now be run down the thread until the whole assembly is tight. One of the slots in the castellated nut

should now be lined up with one of the holes drilled through the threaded section and a new split pin fitted.

6.3 The loose brickwork around where the foundation beams are keyed into the walls should be removed and new brickwork cemented in to the gaps to ensure that the foundation beams are unable to move in any direction.

6.4 The four through bolts that secure the low-sided frame to the foundation beams should be replaced and all tightened down to ensure the whole frame is rigid and level. This may require some packing under one or more of the location points as it was possible to rock the frame.

6.5 All the metalwork associated with the bells and the frame should be wire brushed either by hand or using a wire cup brush in an angle grinder using suitable safety equipment. The metal should then be primed with one coat of red oxide primer, followed by two of undercoat and then one coat of gloss topcoat. Alternatively two coats of hammerite paint can be applied. Do not do anything to the bell itself.

NOTE The bearings must be well covered during this remedial work to avoid dust, metal particles, or paint entering the bearing area.

6.6 The top vertical ladder should be securely fastened to the wall making sure that all six 'rawlbolt' fixings are correctly fitted. This work should be carried out before any work on the bell and fittings commences.

6.7 The bell stop needs resecuring in its current position on the top of the frame.

7.0 Other observations

The wooden louvre, and metal roof both appeared to be sound and there was no evidence of water and/or bird ingress in the area.

The vertical ladders are open and not fitted with safety hoops. Although acceptable when the installation was completed this would not be allowed under present safety regulations. When carrying out any of the work listed above special care should be taken. It may be advisable to erect a scaffolding tower in the area which would certainly make the turning and tightening of the clapper an easier task.

8.0 Conclusions

All the work can be carried out on a DIY basis but attached to this report is a list of three bellhangers who would be willing to undertake the work at a cost!

There is no reason why future generations should not enjoy the sound of the chimed bell if the remedial actions outlined above are carried out.

Due to the location of the bell and the structure of the church it is doubtful if the bell will be heard by local people at any point north of the church.

Advice is given in good faith but no liability is accepted.

Robin Lyon

Bell Consultant to the Derby Diocesan Association of Church Bellringers